

What is claimed is:

1. A derivative of heterocyclic compound having nitrogen atom represented by general formula (1):



wherein HAr represents a heterocycle having nitrogen atom, which has 3 to 40 carbon atoms and which may have a substituent;

L represents a single bond, an arylene group having 6 to 60 carbon atoms and may have a substituent, a heteroarylene group having 3 to 60 carbon
10 atoms and may have a substituent or a fluorenylene group which may have a substituent;

Ar¹ represents a divalent aromatic hydrocarbon group having 6 to 60 carbon atoms and may have a substituent;

Ar² represents an aryl group having 6 to 60 carbon atoms and may have a
15 substituent or a heteroaryl group having 3 to 60 carbon atoms and may have a substituent.

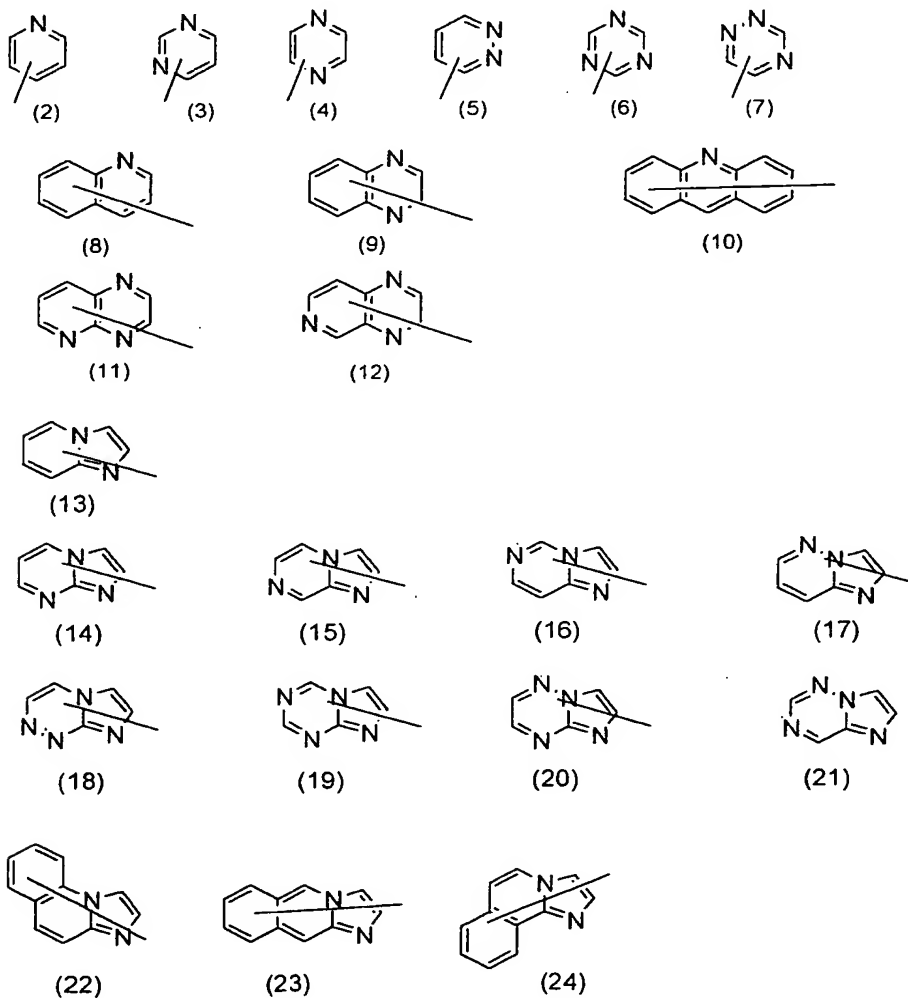
2. The derivative of heterocyclic compound having nitrogen atom according to Claim 1, wherein L represents an arylene group having 6 to
20 60 carbon atoms and may have a substituent, a heteroarylene group having 3 to 60 carbon atoms and may have a substituent or a fluorenylene group which may have a substituent; and wherein Ar¹ represents a divalent aromatic hydrocarbon group having 6 to 60 carbon atoms and may have a substituent;

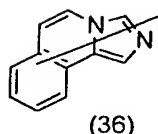
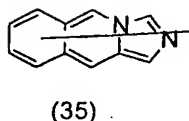
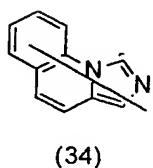
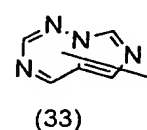
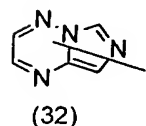
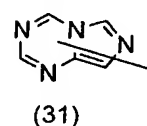
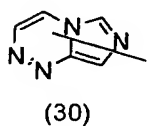
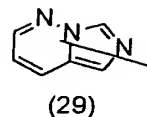
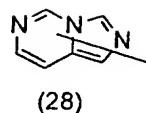
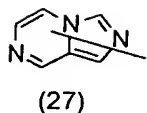
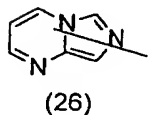
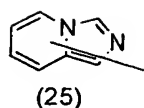
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3. The derivative of heterocyclic compound having nitrogen atom

according to Claim 1, wherein L represents single bond and Ar¹ represents a divalent condensed aromatic hydrocarbon group having 11 to 60 carbon atoms and may have a substituent in general formula (1).

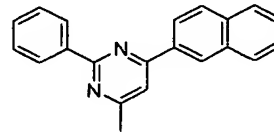
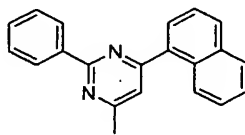
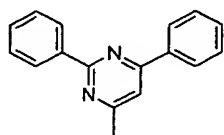
- 5 4. The derivative of heterocyclic compound having nitrogen atom according to Claim 1, wherein HAr is any one group selected from the heterocyclic groups having nitrogen atom represented by the following general formulae (2) to (36):

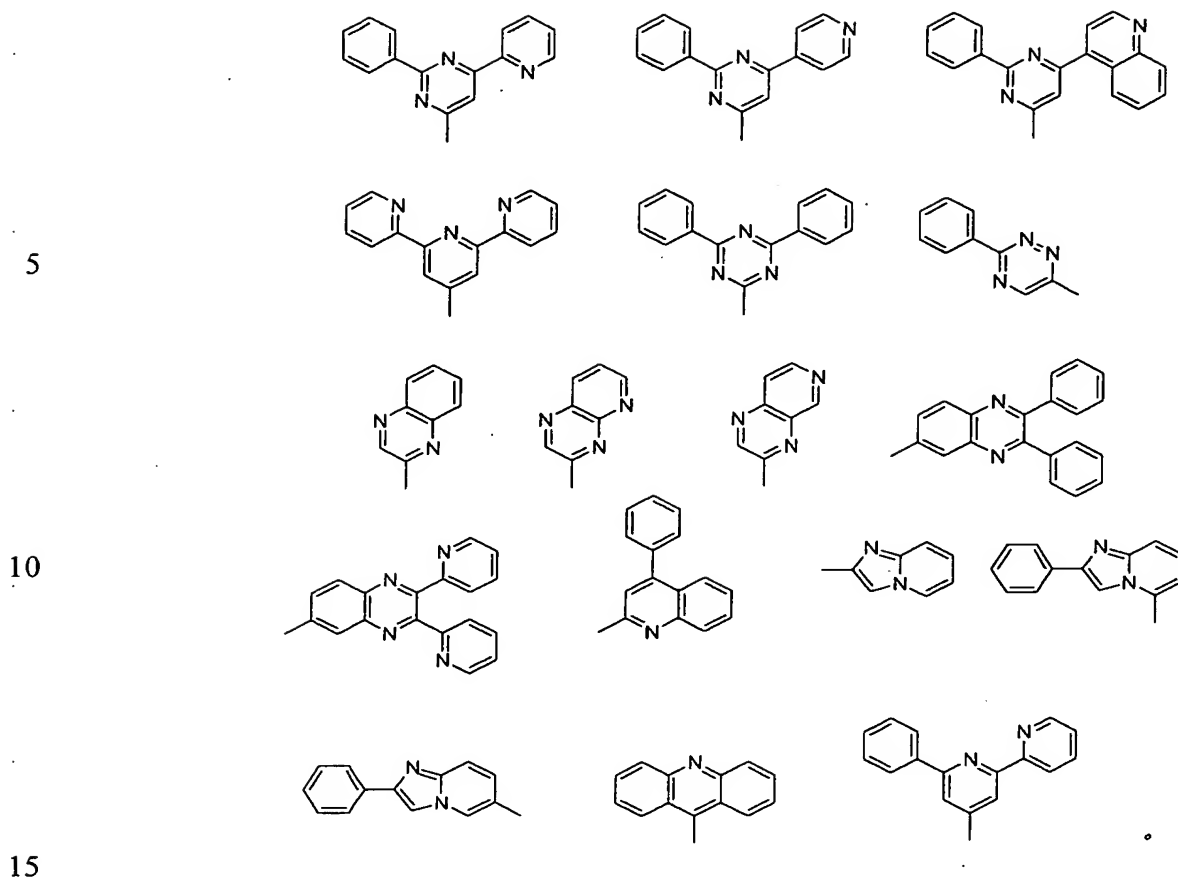




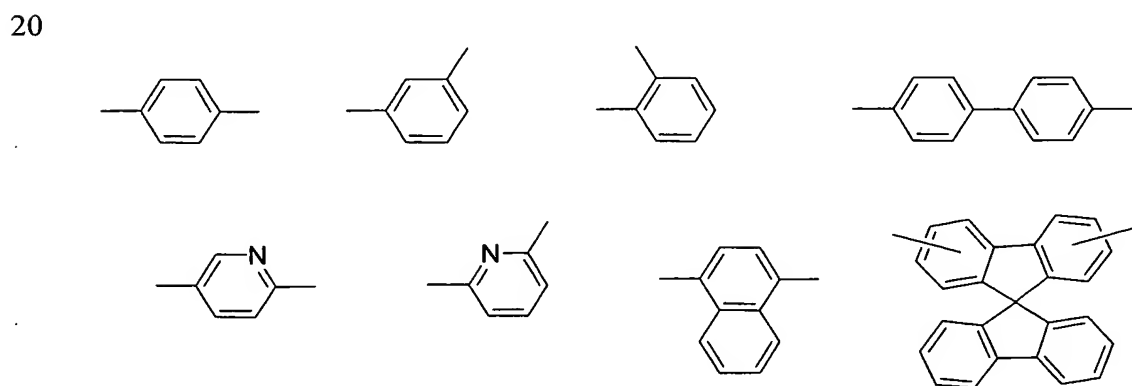
wherein carbon atom in each heterocycle may be bonded with a bonding group comprising an aryl group having 6 to 60 carbon atoms and may have a substituent, a heteroaryl group having 3 to 60 carbon atoms and may have a substituent, an alkyl group having 1 to 20 carbon atoms and may have a substituent or an alkoxy group having 1 to 20 carbon atoms and may have a substituent, and when there are plural of the bonding group, the bonding groups may be the same with or different from each other.

5. The derivative of heterocyclic compound having nitrogen atom according to Claim 1, wherein HAR is any one group selected from the following groups:



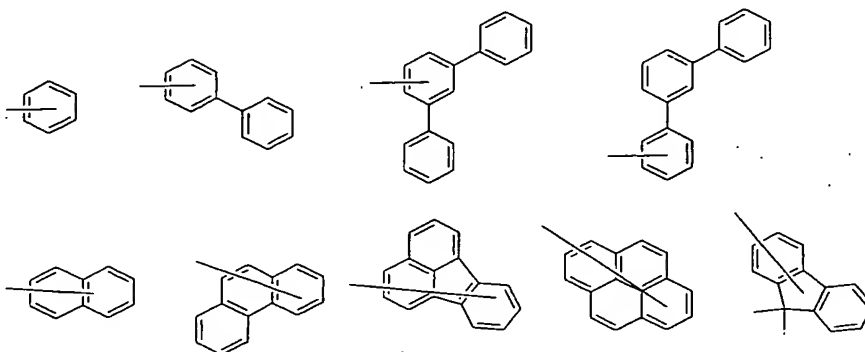


6. The derivative of heterocyclic compound having nitrogen atom according to Claim 1, wherein L is any one group selected from the following groups:



7. The derivative of heterocyclic compound having nitrogen atom according to Claim 1, wherein Ar^2 is any one group selected from the following groups:

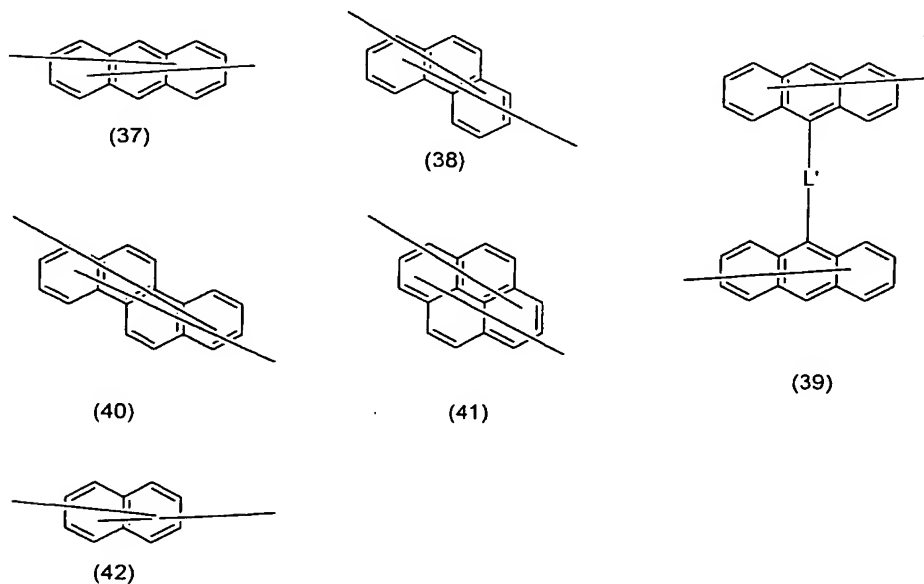
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8. The derivative of heterocyclic compound having nitrogen atom according to Claim 1, wherein Ar^1 is any one group selected from condensed ring groups represented by the following general formulae (37) to (42):

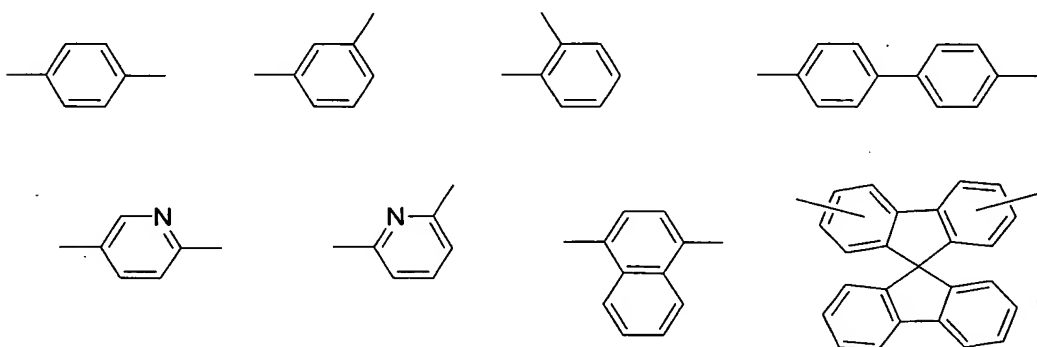
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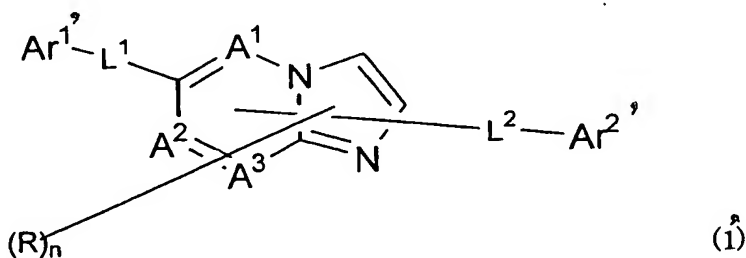
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25 wherein each condensed ring may be bonded with a bonding group of a halogen atom, an alkyl group having 1 to 20 carbon atoms and may have a

have a substituent, an alkoxyl group having 1 to 20 carbon atoms and may have a substituent, an aryloxy group having 6 to 40 carbon atoms and may have a substituent, an aryl group having 6 to 40 carbon atoms and may have a substituent, or a heteroaryl group having 3 to 40 carbon atoms and may have a substituent; when there are plural of bonding groups, the bonding group may be the same with or different from each other, and L' represents a single bond or any one group selected from the following groups:



9. A derivative of heterocyclic compound having nitrogen atom represented by general formula (1'):



wherein A¹ to A³ each independently represents a nitrogen atom or a carbon atom;

Ar^{1'} represents a substituted or unsubstituted aryl group having 6 to 60

nuclear carbon atoms or a substituted or unsubstituted heteroaryl group having 3 to 60 nuclear carbon atoms;

Ar^{2'} represents hydrogen atom, a substituted or unsubstituted aryl group having 6 to 60 nuclear carbon atoms, a substituted or unsubstituted heteroaryl group having 3 to 60 nuclear carbon atoms, a substituted or unsubstituted alkyl group having 1 to 20 nuclear carbon atoms or a substituted or unsubstituted alkoxyl group having 1 to 20 nuclear carbon atoms;

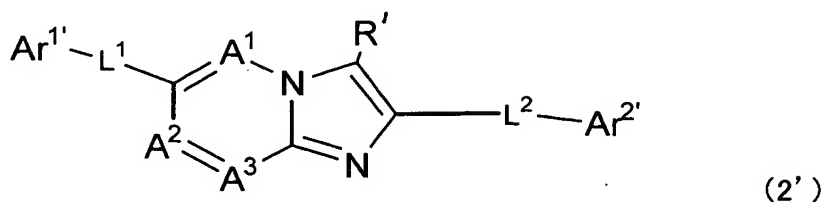
at least one of the groups represented by Ar^{1'} and Ar^{2'} is a substituted or unsubstituted condensed cyclic group having 10 to 60 nuclear carbon atoms or a substituted or unsubstituted condensed mono-heterocyclic group having 3 to 60 nuclear carbon atoms;

L¹ and L² each independently represents the single bond, a substituted or unsubstituted arylene group having 6 to 60 nuclear carbon atoms, a substituted or unsubstituted heteroarylene group having 3 to 60 nuclear carbon atoms or a substituted or unsubstituted fluorenylene group;

R represents hydrogen atom, a substituted or unsubstituted aryl group having 6 to 60 nuclear carbon atoms, a substituted or unsubstituted heteroaryl group having 3 to 60 nuclear carbon atoms, a substituted or unsubstituted alkyl group having 1 to 20 carbon atoms or a substituted or unsubstituted alkoxyl group having 1 to 20 carbon atoms;

n represents an integer of 0 to 5; and when n represents an integer of 2 or greater, the atoms or groups represented by a plurality of R may be the same with or different from each other, and the groups represented by the plurality of R which are adjacent to each other may be bonded to each other to form an alicyclic carbon ring or an aromatic carbon ring.

10. A derivative of heterocyclic compound having nitrogen atom represented by general formula (2'):



wherein A¹ to A³ each independently represents a nitrogen atom or a carbon atom;

Ar^{1'} represents a substituted or unsubstituted aryl group having 6 to 60 nuclear carbon atoms or a substituted or unsubstituted heteroaryl group having 3 to 60 nuclear carbon atoms;

Ar^{2'} represents hydrogen atom, a substituted or unsubstituted aryl group having 6 to 60 nuclear carbon atoms, a substituted or unsubstituted heteroaryl group having 3 to 60 nuclear carbon atoms, a substituted or unsubstituted alkyl group having 1 to 20 nuclear carbon atoms or a substituted or unsubstituted alkoxy group having 1 to 20 nuclear carbon atoms;

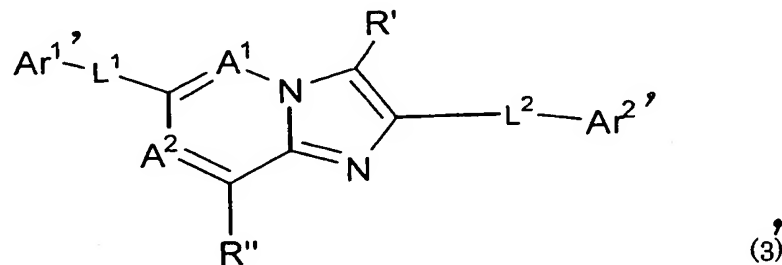
at least one of the groups represented by Ar^{1'} and Ar^{2'} is a substituted or unsubstituted condensed cyclic group having 10 to 60 nuclear carbon atoms or a substituted or unsubstituted condensed mono-heterocyclic group having 3 to 60 nuclear carbon atoms;

L¹ and L² each independently represents the single bond, a substituted or unsubstituted arylene group having 6 to 60 nuclear carbon atoms, a substituted or unsubstituted heteroarylene group having 3 to 60 nuclear

carbon atoms or a substituted or unsubstituted fluorenylene group; and
 R' represents hydrogen atom, a substituted or unsubstituted aryl group
 having 6 to 60 nuclear carbon atoms, a substituted or unsubstituted
 heteroaryl group having 3 to 60 nuclear carbon atoms, a substituted or
 5 unsubstituted alkyl group having 1 to 20 carbon atoms or a substituted or
 unsubstituted alkoxyl group having 1 to 20 carbon atoms;

11. A derivative of heterocyclic compound having nitrogen atom
 represented by general formula (3'):

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15 wherein A¹ to A³ each independently represents a nitrogen atom or a
 carbon atom;

Ar^{1'} represents a substituted or unsubstituted aryl group having 6 to 60
 nuclear carbon atoms or a substituted or unsubstituted heteroaryl group
 having 3 to 60 nuclear carbon atoms;

20 Ar^{2'} represents hydrogen atom, a substituted or unsubstituted aryl group
 having 6 to 60 nuclear carbon atoms, a substituted or unsubstituted
 heteroaryl group having 3 to 60 nuclear carbon atoms, a substituted or
 unsubstituted alkyl group having 1 to 20 nuclear carbon atoms or a
 substituted or unsubstituted alkoxyl group having 1 to 20 nuclear carbon
 25 atoms;

at least one of the groups represented by Ar^{1'} and Ar^{2'} is a substituted or

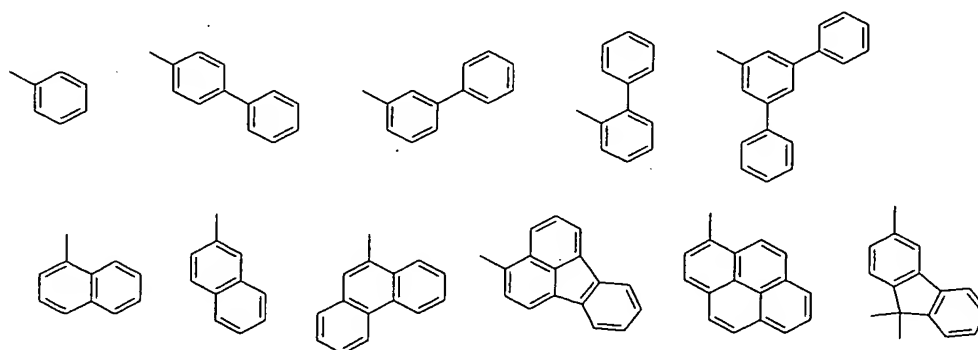
unsubstituted condensed cyclic group having 10 to 60 nuclear carbon atoms or a substituted or unsubstituted condensed mono-heterocyclic group having 3 to 60 nuclear carbon atoms;

L¹ and L² each independently represents the single bond, a substituted or unsubstituted arylene group having 6 to 60 nuclear carbon atoms, a substituted or unsubstituted heteroarylene group having 3 to 60 nuclear carbon atoms or a substituted or unsubstituted fluorenylene group;

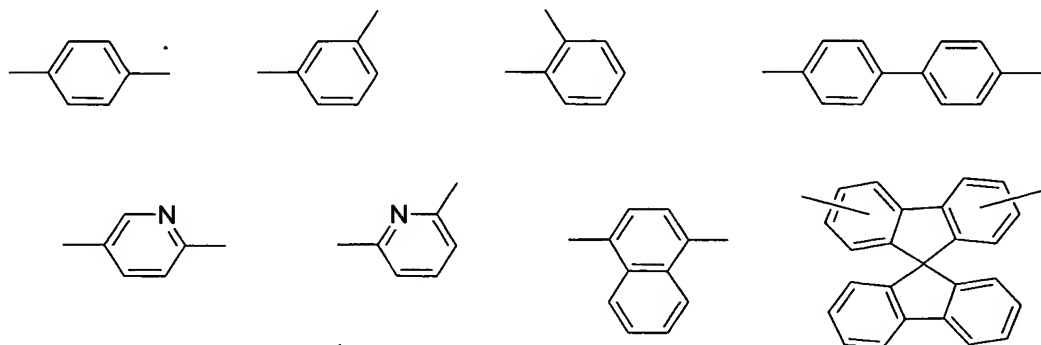
R' and R'' each independently represents hydrogen atom, a substituted or unsubstituted aryl group having 6 to 60 nuclear carbon atoms, a substituted or unsubstituted heteroaryl group having 3 to 60 nuclear carbon atoms, a substituted or unsubstituted alkyl group having 1 to 20 carbon atoms or a substituted or unsubstituted alkoxyl group having 1 to 20 carbon atoms; and

R' and R'' may be the same with or different from each other.

12. The derivative of heterocyclic compound having nitrogen atom according to any one of Claims 9 to 11, wherein at least one of said L¹ and said L² is any one of groups selected from the following groups:



atoms, a substituted or unsubstituted alkoxy group having 1 to 20 carbon atoms, a substituted or unsubstituted aryloxy group having 6 to 40 nuclear carbon atoms, a substituted or unsubstituted diarylamino group having 12 to 80 nuclear carbon atoms, a substituted or unsubstituted aryl group having 6 to 40 nuclear carbon atoms, a substituted or unsubstituted heteroaryl group having 3 to 40 nuclear carbon atoms or a substituted or unsubstituted diarylamino group having 18 to 120 nuclear carbon atoms, and L³ represents the single bond or a group selected from the following groups:



14. An organic electroluminescence device comprising the derivative of heterocyclic compound having nitrogen atom according to any one of Claims 1 and 9 to 11.

15. An comprising at least one organic compound layer containing a light emitting layer sandwiched between a pair of electrodes, wherein the device contains the derivative of heterocyclic compound having nitrogen atom according to any one of Claims 1 and 9 to 11 among the compound layer.

16. The organic electroluminescence device according to Claim 15, wherein said derivative of heterocyclic compound having nitrogen atom is contained in a light emission area.

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17. The organic electroluminescence device according to Claim 15, wherein said derivative of heterocyclic compound having nitrogen atom is contained in the light emitting layer.

10 18. The organic electroluminescence device according to Claim 15, wherein said derivative of heterocyclic compound having nitrogen atom is employed for at least one of an electron injection material and an electron transport material.

15 19. The organic electroluminescence device according to Claim 18, wherein a layer comprising said at least one of the electron injection material and the electron transport material further comprises a reductive dopant.

20 20. The organic electroluminescence device according to Claim 19, wherein said reductive dopant is at least one selected from the group consisting of alkali metal, alkaline earth metal, rare earth metal, oxide of alkali metal, halide of alkali metal, oxide of alkaline earth metal, halide of alkaline earth metal, oxide of rare earth metal, halide of rare earth metal,
25 organic complexes of alkali metal, organic complexes of alkaline earth metal and organic complexes of rare earth metal.